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Extension of SCORM Based Learning Content into Game Based, Multiplayer Training Environments

Project Kickoff

Mary Cherng (Forterra Systems)
Ellen Menaker, PhD (IDSI)
Mike Rustici (Rustici Software)

22 May 2007

RUSTICI
SOFTWARE

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Agenda

- **Project Team Introductions**
- **Project Overview**
- **Discussion**

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Project Team Introductions

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Project Team

Name	Company	Role
Mary Cherng	Forterra	Program Manager
Cary Sandvig	Forterra	Lead MMOG Engineer
Karen Laur	Forterra	Art Director
Ellen Menaker, PhD	IDSI	Senior Instructional Designer
Mike Rustici	Rustici	SCORM Consultant

- Forterra - Provide expertise and technology in the area of distributed multiplayer game technology
- IDSI – Provide support for the instructional design required to determine the efficacy of MMOG technology modified to support SCORM standards
- Rustici Software - Provide valuable experience and insight into the technical issues around SCORM, SCOs, and the ADL run-time environments

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Forterra Systems

- Founded in 1998, There.com, by people with joint backgrounds in entertainment and simulation/training, and adapted by MTV (Music Television) to support a social network based on the reality show “Laguna Beach”
- Reorganized in 2002 to focus on serious applications in collaborative training, cultural training, and education
- Leveraged in programs supported by U.S. Army RDECOM, U.S. Army TATRC, Stanford University, FDNY
- Headquartered in San Mateo with offices in Washington and Orlando

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Product Vision

Realistic, large-scale, interactive environment that allows a large number of people to simultaneously interact much as they would in the real world …

- **Using standard commercial equipment**
- **Using standard commercial environments**
- **Thousands of participants**
- **Anywhere/anytime**
- **Interact with objects in the environment**
- **Human interaction**
- **Large-scale simulation infrastructure**

…Many forms of simulation in a single world environment

Forterra's technology allows National Guardsmen to train side-by-side with Soldiers in Iraq.

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What is OLIVE?

On-Line Interactive Virtual Environment (OLIVE)

- **Multi-User Persistent Virtual World Platform**
- **Supports many thousands of concurrent users and non-player characters (SAF)**
- **Client/Server - software runs on standard windows PC and Linux server hardware**
- **Adaptive server load distribution prevents failures and latency as scenarios evolve and objects move throughout simulated environment**
- **Updates to virtual environment automatically downloaded from the server**
- **Networking engine minimizes bandwidth requirements**

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Lifelike Avatars

- **Avatars Mimic Natural Human Movement**
  - Controlled via simple keyboard or controller input
  - Avatars use realistic animations and advanced blending techniques to move through virtual environment
  - Emotion and expression framework combines user input and scripted behavior to mimic culturally-specific movement patterns
  - Integrated physiological models (US Army TATRC)
- **Multiple Forms of Communication Between Users**

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After Action Review

- **Simulation Replay**
  - Server-based simulation replay
  - Collects all voice, keyboard/mouse and controller inputs across the system
  - VCR playback features
  - Annotation features
  - Aptima plug-in for performance measurement
  - DIVAARS integration (University of Central Florida/ARI)

- **Future SCORM compliance (JADL Co-Lab/Aptima)**

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Intelligent Decision Systems, Inc. (IDSI)
Who We Are

- Industry leader in education and training for human and organizational performance
- Developed over 1,200 hours of courseware in 2004
- Delivered over 217 task orders on time, within budget
- 110 highly skilled professional employees
- Award winning performance-based learning products

Woman Owned Small Business
(under $21 million)
established in 1996

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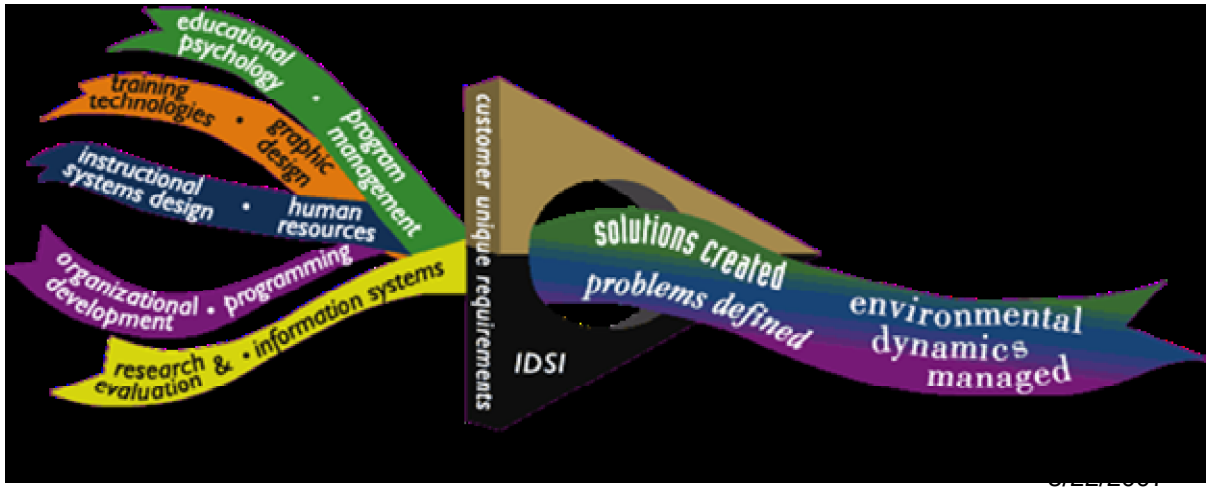
Intelligent Decision Systems, Inc. (IDSI) Our Background

- Innovative company delivering 21st century human and organizational performance products, support, and services
- Combines capability of a large company with the flexibility of a small company
- Proven methodologies and processes are based on research, leading-edge technologies, and practical experience



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Intelligent Decision Systems, Inc. (IDSI)
Our Approach

- Performance improvement is the goal
- Training is not always the answer
- Each effort is approached with no preconceived solution
- Our products, services and support are tailored to meet the unique needs of our customers

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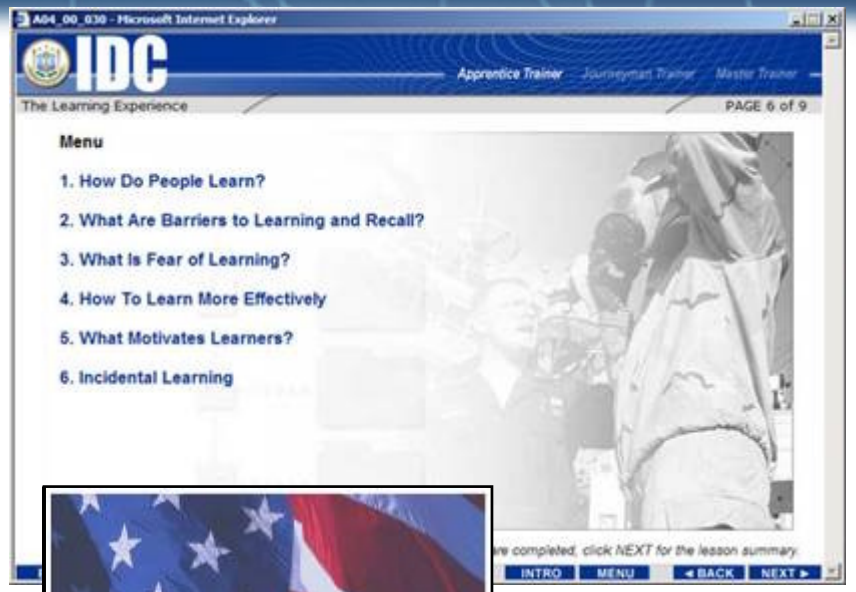
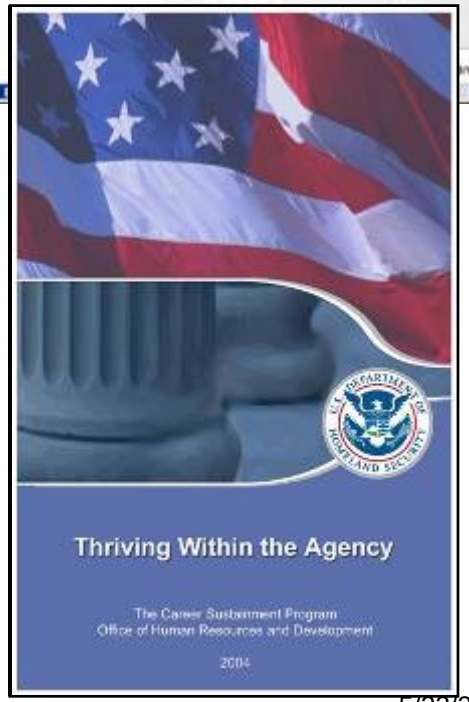
Intelligent Decision Systems, Inc. (IDSI) Products and Services

- Human and organizational performance analysis
- Research projects
- Evaluations and assessments
- Traditional and Web-based courseware design and development
- Game-based learning and scenarios
- Mobile technologies
- Modeling and Simulation
- Electronic Performance Support Systems (EPSS





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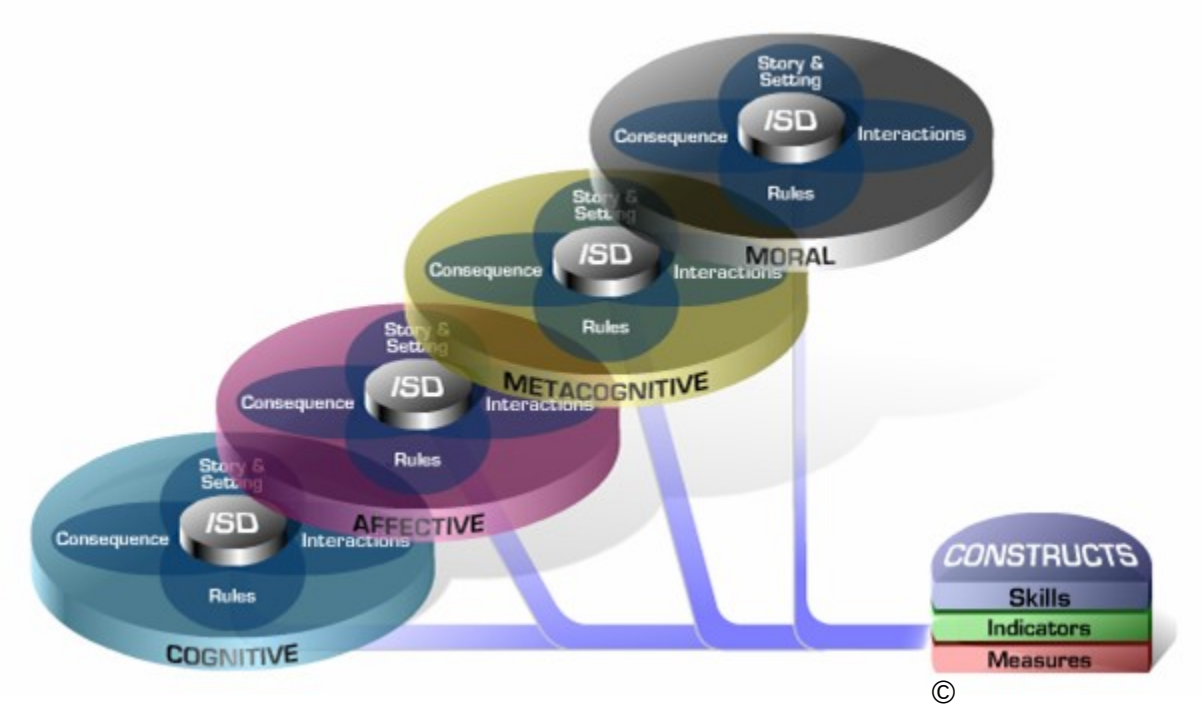
Intelligent Decision Systems, Inc. (IDSI) Game-Based Learning Expertise

Our Passion: Designing the games that engage, teach, improve performance, and measure results



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Rustici Software - Who We Are

- Software development company
- Founded by veterans of the e-learning industry
- Unique blend of both content and LMS development experience
- Exclusively focused on SCORM and other learning standards
- Active members of the ADL community
- Successfully worked with dozens of clients

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Rustici Software's Services

- LMS Standardization
- Content Standardization
- Tool Development
- Training
- Consulting
- Dispute Resolution / Mediation

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Rustici Software's Products

- **SCORM Engine – for LMS standardization (formerly SCORM Content Player or SCP)**
- **SCORM Driver – for Content standardization (formerly RSECA)**
- **SCORM Test Track – for testing and evaluating SCORM Content**
- **Offline Player – prototype complete, currently in final development**
- **Benefits of using these products include:**
  - Faster time to market
  - Higher quality end product
  - Easier upgrades

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Rustici Software - What We Really Do

- **We solve a problem that nobody wants to solve themselves.**

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Project Overview

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Project Objectives

1) Research (Formal ISD process)

- Identify training opportunities for using an MMOG environment as a delivery platform for reusable SCORM-compliant content
- Identify the characteristics of SCOs for integration and delivery within MMOGs
- Identify user interface paradigms for delivery of SCOs in an unstructured multiplayer, 3D virtual environment

2) Prototype Development

- Integrate a MMOG with the current Joint ADL Integrated Prototype architecture (IPA) and game lobby
- Develop a demo prototype

*Courtesy of www.rotaryaction.com

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Project Taskings

1) Front-end analysis of counter IED scenarios

- Determine the desired performance, identify gaps in existing training, and describe the characteristics of a multiplayer game based training solution that can address training gaps
- Provide a framework to define characteristics of effective SCOs
- Specify appropriate SCOs for the counter IED scenarios

2) Design, develop, test, and integrate LMS/OLIVE and Trainee SCO interface

- Design and develop a re-usable component that allows a MMOG engine to query a LMS and retrieve the appropriate SCOs for a trainee
- Render the SCOs within a MMOG
- Return information about the trainee's learning to the LMS
- Leverage an existing ADL-COLAB program working to integrate Aptima's performance assessment technology with the Integrated Prototype architecture (IPA)

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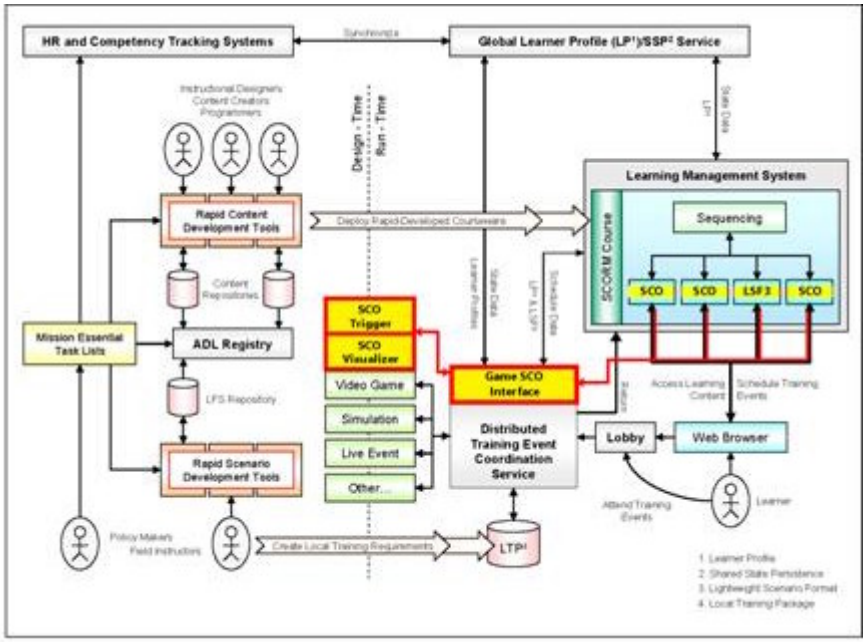
Technical Approach – Modified IPA



- Implement interfaces for finding, accessing, and displaying the SCOs within the MMOG
- Identify new parameters to extend the concept of sharable state persistence
- Define standards for the functionality of the lobby - Consideration will be given to whether the lobby functionality should ultimately be a part of an LMS or part of an MMOG, and ultimately a prototype example will be developed.
- Extend the DTECS (Distributed Training Event Coordination Service) by implementing a re-usable module

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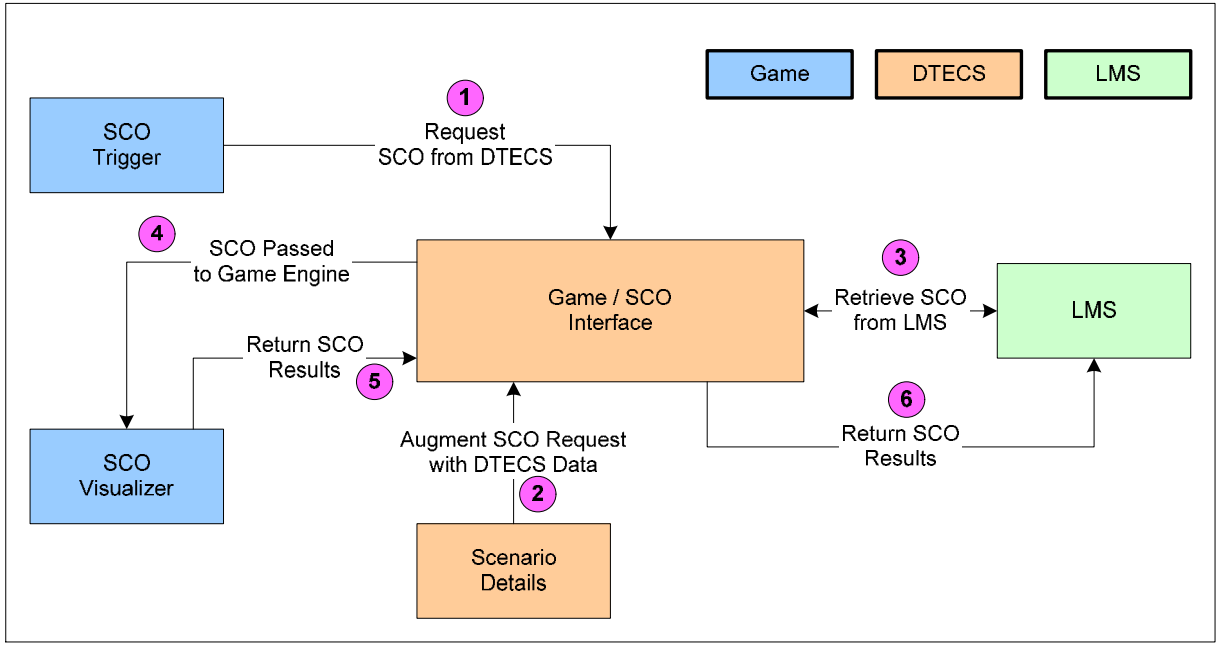
Technical Approach – Game/SCO Interface



- Provide a mechanism for the game to request a SCO (through the SCO Trigger)
- Receive SCO requests from the game
- Augment SCO requests with scenario details from DTECS
- Forward SCO requests to the LMS
- Return the SCO location to the game engine
- Serve as a transport layer for returning SCO results back to the LMS

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Demonstration

- **Background**
  - Related program award September 2006, extension to the RDECOM program, to further adapt the technology for use in training ways to defeat the growing threat from IEDs
  - Develop a training capability for counter-IED operations including predict, prevent, detect, neutralize, mitigate, and to conduct post-event analysis.

- **Leverage exercises and scenarios that will be developed in parallel for the RDECOM/JIEDDO program.**
  - A variety of typical operations as soldiers would encounter in Iraq and perform counter IED activities as required, includes complex, team oriented exercises where a variety of combat, reconnaissance, medical, security, and cross-cultural training opportunities
  - Tied to an actual IED training program that has potential to directly deploy if the development is successful

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Project Timeline

Target Date	Event
April 18 2007	Contract Award – Project Start
May 22, 2007	Project Kickoff/Phase I (ISD Research) Start
October 16, 2007	Phase I Complete/Phase II (Development) Start
April 1, 2008	Phase II Complete/Demonstration Planning
December 2008	IITSEC Demo

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Project Deliverables

CDRL #	Description	Due
A001	Monthly Progress Reports	30 DAC Award (5/18/07) And By The 10th Of Each Month Thereafter
A001	Project Work Plan	45 DAC Award (6/21/07)
A001	Systems Requirement Document	45 DAC Award (6/21/07)
A001	Software Design Document	90 DAC Award (8/23/07)
A001	In-progress Review 1	On The Last Day Of The Month Of Award + 6 Months (10/16/07)
A001	In-progress Review 2	On The Last Day Of The Month Of Award + 12 Months (4/1/08)
A002	Computer Software Product End Items	30 days prior to end of contract (12/1/08)
A003	Scientific & Technical Report	30 days prior to end of contract (12/1/08)

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Benefits to the ADL Community

- Ultimately an engaging, distributed team training capability with built in support for the reuse of content that is designed for and tied to a critical rapid deployment effort to counter IEDs
  - Supports the rapid acquisition of actionable knowledge and leadership skills.
  - Reduce the costs of training exercises
  - Provide a high level of convenience for users
  - Allow the leverage of remote experts whose skills and knowledge can be projected to trainee
  - Provide a cost effective solution that minimizes travel requirements for users
  - Provide a rich environment to facilitate rapid learning, and relies on commodity computer hardware as a host
  - Outline a roadmap for training content to migrate to future MMOG-based delivery platforms

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Transition Opportunities

- Rapid response initiative sponsored by JIEDDO to develop an interactive team training capability for counter IED training which has been identified as a critical training capability by US Forces (RDECOM)
- Application across a broad spectrum of Commercial, DoD, Department of Justice/FBI, Department of State, Coalition partners, and especially Intelligence Community requirements
- Department of Energy could benefit by using the technology for nuclear energy incident management planning and training
- Department of Homeland Security (DHS) – First responder community
- Commercial sector as a market segment

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Potential Future Taskings

- **Conduct user trial (Phase III)**
  - Extract key information from the users who will participate in the scenarios
  - Collect qualitative and quantitative data relative to how the system meets training objectives and whether the technology itself is a barrier or an aid to completing the tasks
  - Measure the ability of an MMOG to access and deliver SCOs to improve individual and team performance related to counter IED activities
  - Abstract additional requirements and identify gaps that can be addressed in further research
  - Document the findings, including AAR, and provide scientific explanations to the key questions being investigated

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Potential Future Research

- Automatic triggering of SCO delivery based on actions within the virtual environment
- Ability to manage multiple branching SCOs within a MMOG environment
- Synchronization with Non-Player Controlled (NPC) role-players within a SCO
- Capability to pause and restart a team exercise within a MMOG, and providing a library of scenarios to a LMS

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Discussion

- **Programmatics**
  - Deliverable dates
  - IPR scheduling

- **What's Next**
  - Phase I Instructional Design Start
  - Knowledge engineering/subject matter experts